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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,637	03/31/2004	Richard Jones	P-6478-US	4979

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EITAN, PEARL, LATZER & COHEN ZEDEK LLP
10 ROCKEFELLER PLAZA, SUITE 1001
NEW YORK, NY 10020

EXAMINER

DUPUIS, DEREK L

ART UNIT PAPER NUMBER

2883

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/813,637	Applicant(s) JONES ET AL.	
	Examiner Derek L. Dupuis	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/31/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 3/31/2004 has been considered by the examiner.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 400 in figure 7.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 300 (see paragraph 21).
4. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

-or-

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 2, 5-9, 11, 12, 15, 16, 19-21, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by *Liu et al (US 2002/0197013 A1)*.

7. Liu et al teach an external cavity laser device (101) comprising a laser source (121/123) and an external laser cavity defined between the laser source (121/123) and a Bragg grating (113). The Bragg grating (113) is formed in a semiconductive layer (105) attached to an insulating substrate (107) (see paragraph 24). The Bragg grating (113) shown in better detail in figure 2 and referenced as “201”. The Bragg grating (113/201) includes a plurality of alternating elements of first and second, different substantially electrically insulating materials (see paragraphs 25 and 29-31). The alternating elements are substantially in contact with the insulating substrate (107) as shown in figure 1. The external cavity laser device is able to oscillate an optical signal generated by the laser source (121/123) at a substantially fixed frequency determined by the structure of the Bragg grating (113/201) (see paragraphs 22, 26, and 27). The device can also comprise a ribbed waveguide as shown in figure 3. The ribbed waveguide is in a direction

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substantially perpendicular to interfaces between the first and second elements of the Bragg grating as is shown in the figure. Liu et al also teach that a current injection modulator can be used to modulate an optical signal generated by the laser (see paragraphs 47-51).

8. Liu et al also teach an optical multiplexing system with optical transmitters and receivers as shown in figure 9 (also see paragraph 5). The optical splitter acts as a switch to switch optical signals between the plurality of output branches as can be seen by the figure. The transmitter includes an optical component including the Bragg grating discussed above. The waveguide of the Bragg grating can have a ribbed structure as discussed above and the plurality of alternating elements are in contact with an insulating substrate layer as discussed above. The transmitter comprises an optical coupler where the output of the transmitter is coupled to the input of the splitter as can be seen in the figure.

9. Liu et al also teach a method as shown in figures 1-3 and 7-9 of guiding an optical signal and of performing an optical function on the signal using an optical arrangement comprising a Bragg grating as discussed above. Liu et al teach that the optical function could include oscillating an optical signal at a desired frequency (see paragraph 27 and figure 1), reflecting a signal (see figure 1 and paragraph 26) and filtering a signal (see paragraph 27 and figures 7 and 8).

10. Claims 1-4, 6-14, and 16-22 are rejected under 35 U.S.C. 102(e) as being anticipated by *Jones (US 2005/0213880 A1)*.

11. Jones teaches an external cavity laser device (401) comprising a laser source (403/405) and an external cavity defined between the laser source (403/405) and a Bragg

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grating (407) formed in a semiconductive layer (419) attached to an insulating substrate (see paragraph 24). The Bragg grating comprises a plurality of alternating elements of first and second, different types of silicon oxynitride. The first and second alternating elements are substantially in contact with the insulating substrate. The first and second alternating elements differ in a relative composition of oxygen and nitrogen (see paragraph 29). The external cavity laser device (401) is able to oscillate an optical signal generated by the laser source (403/405) at a substantially fixed frequency determined by the structure of the Bragg grating (407) (see paragraph 28). Figure 6 shows a block diagram view of a larger system including the external cavity laser device (401) being represented by laser (603). The device is coupled along an optical fiber to a current injection modulator (421/605). The modulator is coupled to an optical power monitor (607) to monitor the power of the signal (see paragraphs 36 and 37).

12. In figure 6, the system includes an optical transmitter (603) and an optical receiver (607). The device (605) can be an optical switch (see paragraph 37). The transmitter or receiver includes the optical component (413) that comprises a Bragg grating (407) described above (see paragraphs 36 and 37). The optical component (413) comprises an optical coupler (see paragraphs 30-33).

13. Jones also teaches a method as shown in figures 4 and 6 of guiding an optical signal and of performing an optical function on the signal using an optical arrangement comprising a Bragg grating as discussed above. Jones teaches that the optical function could include oscillating an optical signal at a desired frequency (see paragraphs 28 and 29), reflecting a signal (see figure 4) and filtering a signal (see paragraph 28).

The applied reference has a common inventor and assignee with the instant application. However, the inventive entity is not entirely the same because some of the inventors of this application are not inventors listed on the reference. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 3, 4, 10, 13, 14, 17, 18, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Liu et al (US 2002/0197013 A1)* as applied to claims 1, 2, 5-9, 11, 12, 15, 16, 19-21, and 23 above, and further in view of *Wiesmann et al (“Large UV-induced negative index changes in germanium-free nitrogen-doped planar SiO₂ waveguides”)*.

16. Liu et al teach a system including an external cavity laser comprising a Bragg grating with a plurality of alternating elements as discussed above. Liu et al also teach that the laser can be coupled to an optical fiber or waveguide to transmit an optical signal as shown in figure 9. While Liu et al teach that the system outputs optical signals, Liu et al do not teach that output of the laser is coupled to a power monitor to monitor the

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optical power. Liu et al teach that receivers can be used to receive outputs (see paragraph 5). It is routine in the art that optical receivers monitor output power.

17. Liu et al do not teach that the plurality of alternating elements comprise different types of silicon oxynitride and that the elements differ in their relative concentration of oxygen and nitrogen. Wiesmann et al teach that SiON is commonly used in planar optical devices such as waveguides and Bragg gratings (see first paragraph of Wiesmann et al). Wiesmann et al teach exposing a SiON waveguide to UV light to create an alternating pattern to make a Bragg grating (see first and second paragraphs). The exposed areas would alternate with unexposed areas and the areas would differ in their concentrations of oxygen and nitrogen and thus would have the different refractive indices needed for Bragg grating effects (see first three paragraphs).

18. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the external cavity laser of Liu et al by using SiON alternating elements as taught by Wiesmann et al. Motivation to do this would be that SiON is known to “offer a higher degree of design freedom in the fabrication of planar optical waveguides because the refractive index can be varied from 1.45 up to 2.00” (see first paragraph). Furthermore motivation is the suggestion by Wiesmann et al to use the SiON alternating elements in a Bragg grating (see first paragraph). Additional motivation is the suggestion by the primary reference, Liu et al, to use materials comprising Group IV and V elements (see paragraph 29) as the alternating elements of the Bragg grating. Si, and N are all Group IV and V elements.

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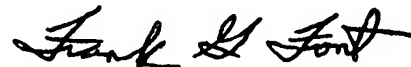
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek L. Dupuis whose telephone number is (571) 272-3101. The examiner can normally be reached on Monday - Friday 8:30am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Derek L. Dupuis
Group Art Unit 2883



Frank G. Font
Supervisory Patent Examiner
Technology Center 2800